

$P_{\min 2}$  and  $\alpha_{\max 2}$  - minimum pitch and maximum twist angle of tapes in the first layer made of superconducting tapes from the cable axis;

B/  $P_{\max 2}$  and  $\alpha_{\min 2}$  - maximum pitch and minimum twist angle of tapes in the first from the cable axis layer made of superconducting tapes of the second part of layers with opposite direction of lay,

wherein said pitch of all the layers varies from a maximum  $P_{\max 1}$  (1000 cm) and  $P_{\max 2}$  (1000 cm) in the intermediate layers and a  $P_{\min 1}$  (2 cm) and  $P_{\min 2}$  (2 cm) in the external layers, while the twist of the tapes in all of the layers varies from  $\alpha_{\max 1}$  (45 degrees) to  $\alpha_{\min 1}$  (0 degrees) and from  $\alpha_{\max 2}$  (45 degrees) to  $\alpha_{\min 2}$  (0 degrees) in at least one of the layers of tapes placed between the external surface of the core and the internal part of the layer, being the current distribution between the layers uniform and each cable layer operating at total current conductance, --

### IN THE CLAIMS

✓ Please cancel claim 18.

Please amend the following claims:

12) A flexible superconducting core for a superconducting power cable, said core comprising:

a) a helical externally corrugated flexible [central core] tubular element comprised of stainless steel;

b) a stainless steel core mesh positioned around said corrugated flexible central core element to provide a relatively flat surface, said mesh consisting of:

i) a first layer of steel tape of one size; and

ii) a second layer of steel tape having a different said size from said first layer of said steel tape, said first layer being positioned over said second layer;

c) a layer of at least one copper tape, positioned on top of said [stainless steel core mesh] second layer of said steel tape;

d) a plurality of superconducting tapes layered over said at least one said copper tape, forming a first group of a plurality of superconducting tape layers;

e) a second group of a plurality of superconducting tape layers, at least one said layer of said second group positioned on top of said first group of plurality of superconducting tapes[one section of a layer of the superconducting tapes positioned next to the central core] being wound in one direction opposite [the other section of said superconducting layers wound on top of said other layers closest to said layer of said copper tape] that of (d); and

wherein [a laying length] a pitch of all the layers varies from a maximum  $P_{\max 1}$  (1000 cm) and  $P_{\max 2}$  (1000 cm) in the intermediate layers and a  $P_{\min 1}$  (2 cm) and  $P_{\min 2}$  (2 cm) in the external layers, while [the laying angle] a twist of the tapes in all of the layers varies from  $\alpha_{\max 1}$  (45 degrees ) to  $\alpha_{\min 1}$  (0 degrees) and from  $\alpha_{\max 2}$  (45 degrees ) to  $\alpha_{\min 2}$  (0 degrees) in at least one of the layers of tapes placed between the external surface of the core and the [inferior] internal part of the layer, being the current distribution between the layers uniform and each cable layer operating at total current conductance.

- 13) The flexible <sup>super</sup>conductor core according to claim 1, wherein said [ tube core] flexible

tubular element has an external diameter of preferably between 4 and 6 cm , an internal diameter between 2 and 4 cm, a corrugation depth ranging between 0.5 cm and 1 cm, and a corrugation pitch between 1.6 and 3 cm.

- 14) The flexible conductor core for claim 1, wherein the stainless steel [tapes] tape for said first layer [have] has a width between 4 cm and 5 cm and a thickness between 0.005 to 0.006 cm and spacing ranging from 0.15 to 0.2 cm and the second layer of stainless steel tape is applied which [as] has a width ranging from 2.5 to 4 cm [and the second layer of stainless steel tape having a width ranging from about 2.5 to about 4 cm] and a thickness ranging from 0.001 to 0.002 cm with a spacing ranging from 0.1 to 0.15 cm.
- 15) The flexible conductor core for a superconducting power cable according to claim 1, wherein the [tubular core] tubular element consists of a first layer of copper tapes with a width ranging from 0.25 cm to 4.0 cm and a thickness ranging from 0.025 to 0.030 cm with a laying length ranging from 2 to 100 cm.
- 16) The flexible conductor core for a superconducting power cable according to claim 1, wherein said core operates with a current selected from the group consisting of direct current, alternate current, current pulses and combinations thereof.
- 17) The flexible conductor core for a superconducting power cable according to claim